ABSTRACT OF THE DISCLOSURE

In a method and system for developing a neural system adapted to perform a specified task, a population of neural systems is selected, each neural system comprising an array of interconnected neurons, and each neural system is encoded into a representative genome. For a given genome, a processing gene encodes a neural output function for each neuron, and the connections from each neuron are encoded by one or more connection genes, each connection gene including a weight function. The given neural system is operated to perform the specified task during a trial period, and performance is continually monitored during the trial period. Reinforcement signals determined from the continually monitored performance are applied as inputs to the functions respectively associated with each of the processing genes and connection genes of the given neural system. At the conclusion of the trial period, the fitness of the given neural system for performing the specified task is determined, usefully as a function of the reinforcement signals applied during the trial period. A set of genomes, respectively representing the neural systems of the population that have been determined to have the highest fitness values, are selected for use in forming a new generation of neural systems.